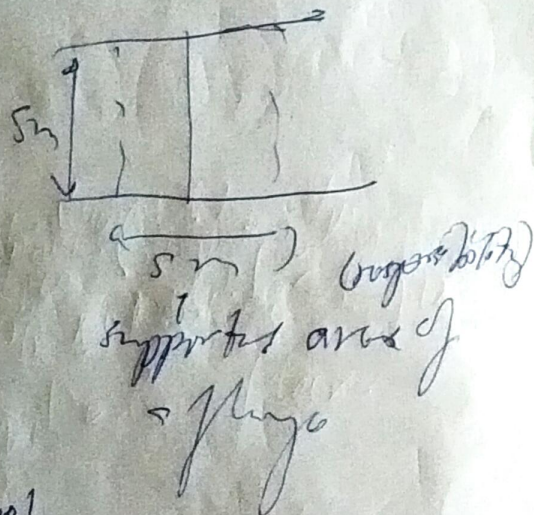
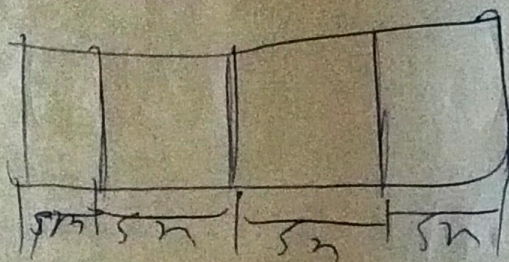
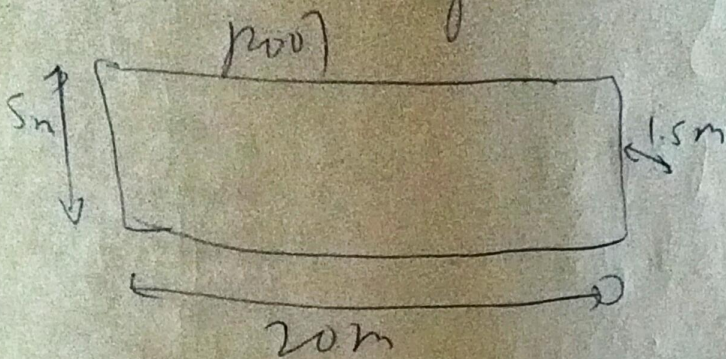


Donner Kemmer Villanova
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(1)

Long 2, Long 1

$$F_W = \gamma (s_m)(s_m)$$

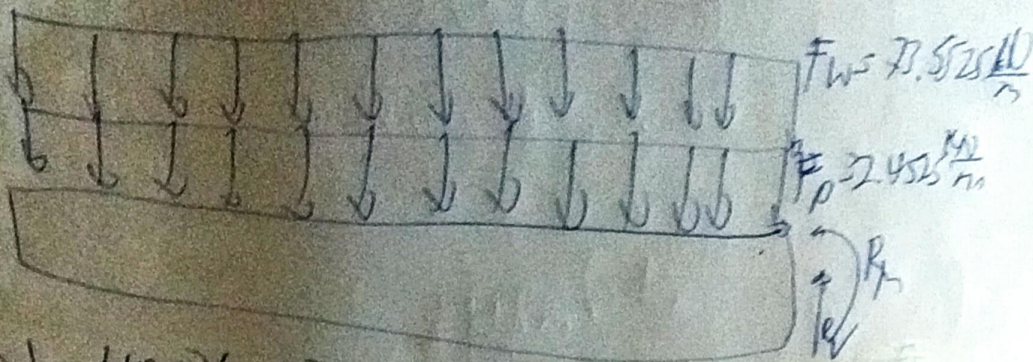
$$\frac{P}{W} = \frac{7.8 \text{ kN}}{1 \text{ m}^2} (5 \text{ m}) (1.5 \text{ m})$$

$$F_w = 73.5525 \frac{LN}{m}$$

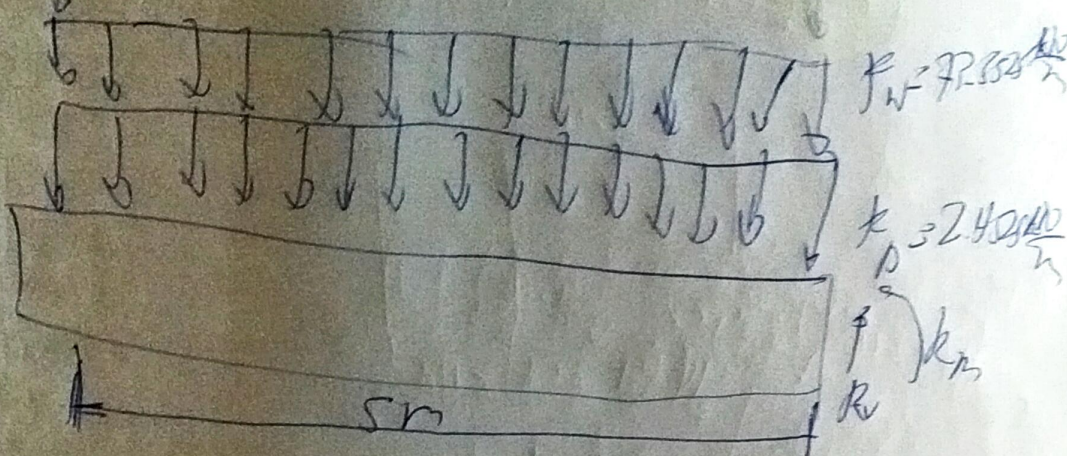
(2)

$$(2) R_D = W_D \gamma = 250(9.81) = 2.452 \frac{kN}{m}$$

$$F_D = 2 \cdot 7525 \frac{\text{N}}{\text{m}}$$

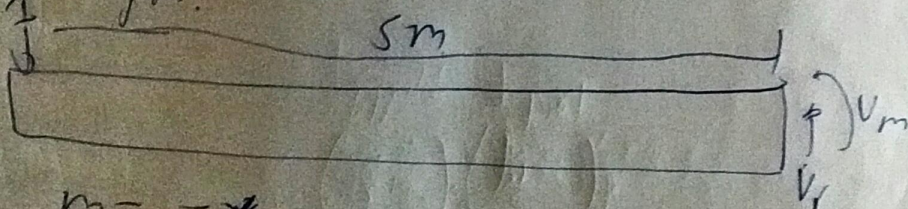


(4) $w_p = \frac{1}{1000} \times \left(9.81 \frac{N}{m^2} \right) = 9.81 \times 10^{-3} = 0.981 \times 10^{-2}$



(5)

Virtual system:



$m = -x$

real system:

$$m = 0.981(x) - \frac{2.4525}{2} x^2 - \frac{77.5525}{2} x^2$$

$$m = 0.981x - 39.0025x^2$$

$$1. \Delta = \int_0^L \frac{m M}{EI} dx$$

$$1. \Delta = \int_0^5 \frac{(-x)(-0.981x - 76.0025x^2)}{EI} dx$$

$$1. \Delta = \frac{5978.7656}{EI}$$

$$E = 200 \text{ GPa} = 200 \times 10^3 \text{ MPa}$$

$$I = I_x = 8490 \times 10^6 \text{ mm}^4$$

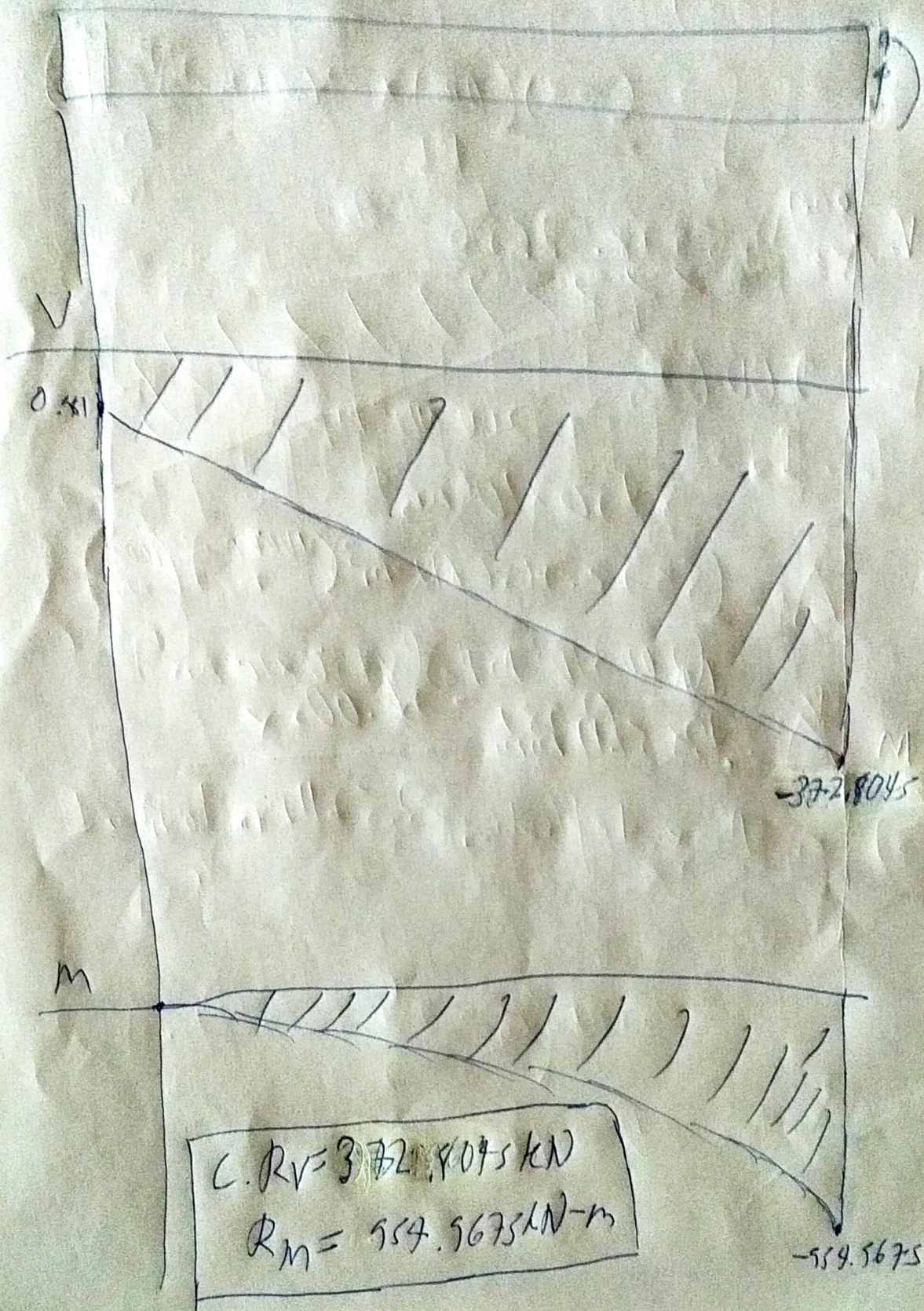
$$\Delta = \frac{(5978.7656 \text{ kN-m}^3) \left(\frac{1000 \text{ mm}}{\text{m}} \right)^3 \left(\frac{1000 \text{ N}}{\text{kN}} \right)}{(200 \times 10^3 \text{ MPa})(8490 \times 10^6 \text{ mm}^4)}$$

$$\Delta = 3.5211 \text{ mm}$$

(5) 9. Max deflection = 3.5211 mm downward

$$V = \frac{dM}{dx} = -0.981 - 76.0025x$$

2.



24
If you are a structural engineer the pool based on
the results of your analysis, what aspects
of the design (wall supports, chego cross section,
chego pool diameter, etc.) will you chego?
(I have mentioned other options as this is your
decision as a designer).

I do not think that more supports
are necessary since the built-in supports to
be fine with this configuration. If ever I am going to
add, I am going to add a truss that goes from
the column to the edge of the pool.

I think that the cross section of the
beam is sufficient. Even though I found a 3.521 mm
deformation, this deformation is imperceptible in
practice.

I don't think that I have enough information
to decide to shrink the pool. However, I would be
opposed to expanding the pool since expanding the
pool would make the moment reaction too excessive
already.

Although this is not necessary, adding a few
columns at the edge of the pool would improve the redun-
dancy of the structure.